1. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $x^3 + bx^2 + cx + d$.

$$3 - 2i \text{ and } -3$$

A. $b \in [1.1, 4], c \in [-5.1, -3.6],$ and $d \in [-40, -32]$

B. $b \in [-0.4, 2], c \in [-2.9, 0.1],$ and $d \in [-9, -4]$

C. $b \in [-0.4, 2], c \in [3.2, 8.7],$ and $d \in [4, 7]$

D. $b \in [-6.7, -1], c \in [-5.1, -3.6],$ and $d \in [36, 41]$

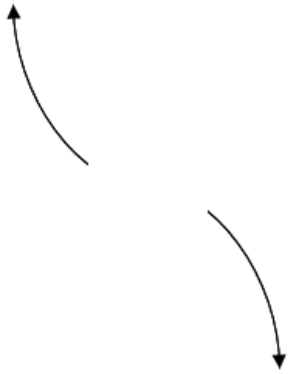
E. None of the above.

---

2. Describe the end behavior of the polynomial below.

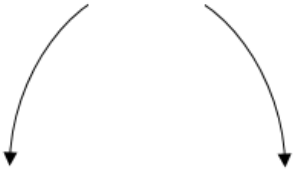
$$f(x) = 2(x-9)^3(x+9)^8(x-7)^3(x+7)^5$$

A.

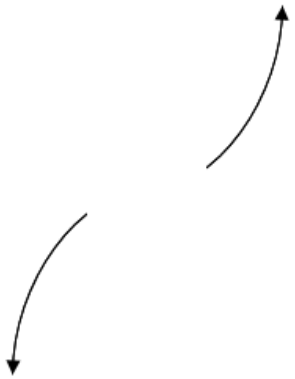


C.

B.



D.



E. None of the above.

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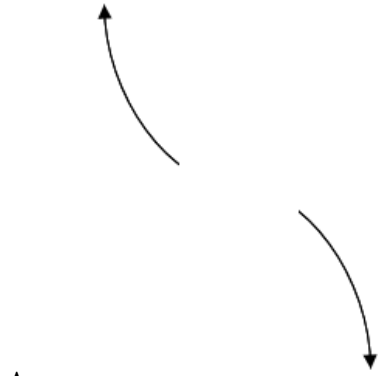
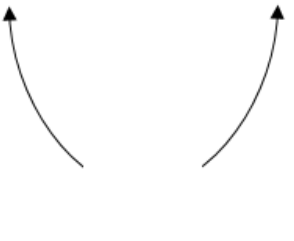
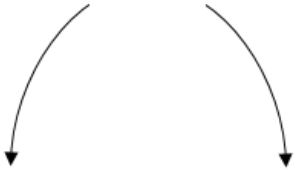
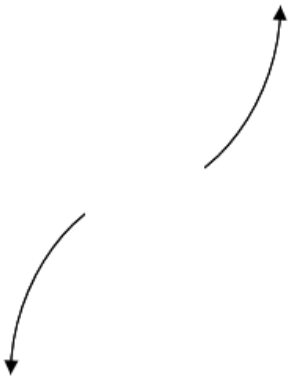
3. Describe the end behavior of the polynomial below.

$$f(x) = -4(x-2)^5(x+2)^{10}(x-3)^5(x+3)^6$$

A.


C.


B.


D.


E. None of the above.

---

4. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$-6, \frac{-3}{4}, \text{ and } \frac{7}{2}$$

A. $a \in [3, 10], b \in [-75, -66], c \in [108, 118],$ and $d \in [125, 128]$

B. $a \in [3, 10], b \in [-26, -24], c \in [-154, -145],$ and $d \in [125, 128]$

C. $a \in [3, 10], b \in [23, 33], c \in [-154, -145],$ and $d \in [-130, -119]$

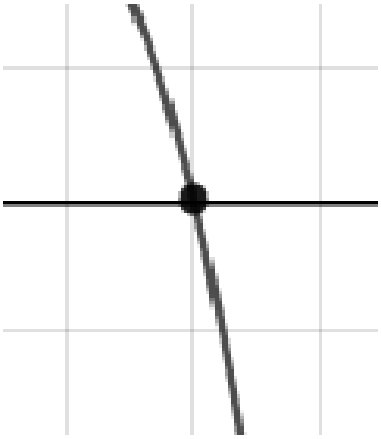
D. $a \in [3, 10], b \in [-89, -77], c \in [222, 233],$ and $d \in [-130, -119]$

E. $a \in [3, 10], b \in [23, 33], c \in [-154, -145],$ and $d \in [125, 128]$

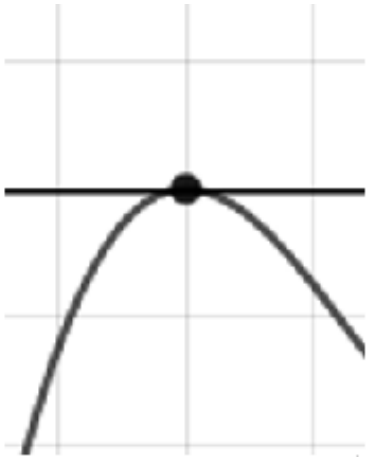
---

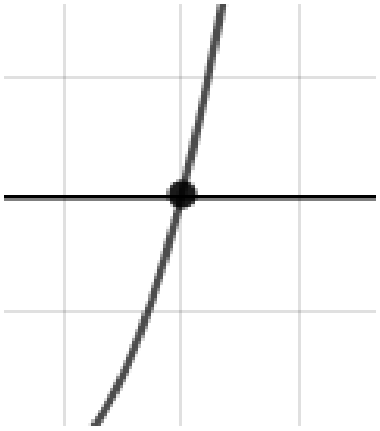
5. Describe the zero behavior of the zero $x = 3$ of the polynomial below.

$$f(x) = 6(x-3)^4(x+3)^9(x+7)^4(x-7)^8$$

A. 

C. 

B. 

D. 

E. None of the above.

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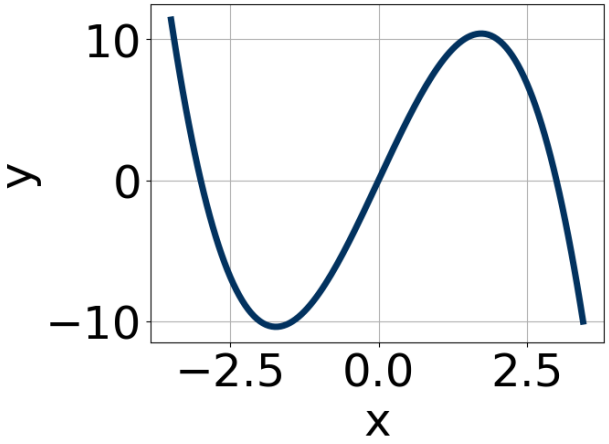
6. Which of the following equations *could* be of the graph presented below?



A. $5x^5(x-3)^{10}(x+3)^5$

B. $-7x^9(x-3)^4(x+3)^9$

C. $-14x^{11}(x-3)^5(x+3)^9$

D. $-18x^9(x-3)^4(x+3)^8$

E. $17x^7(x-3)^5(x+3)^5$

---

7. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form x^3+bx^2+cx+d.

$$-2-5i \text{ and } 3$$

A. $b \in [0.2, 3.8], c \in [16.8, 19.7],$ and $d \in [-92, -81]$

B. $b \in [0.2, 3.8], c \in [-3.5, 0.3],$ and $d \in [-9, -3]$

C. $b \in [-4.5, 0.5], c \in [16.8, 19.7],$ and $d \in [86, 92]$

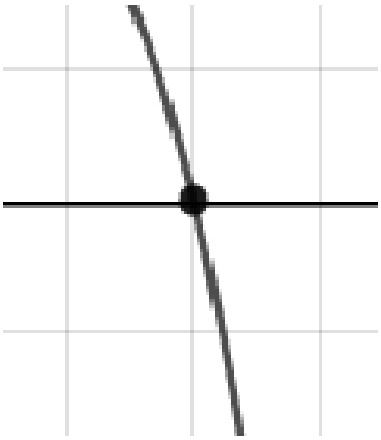
D. $b \in [0.2, 3.8], c \in [1.8, 4.3],$ and $d \in [-18, -11]$

E. None of the above.

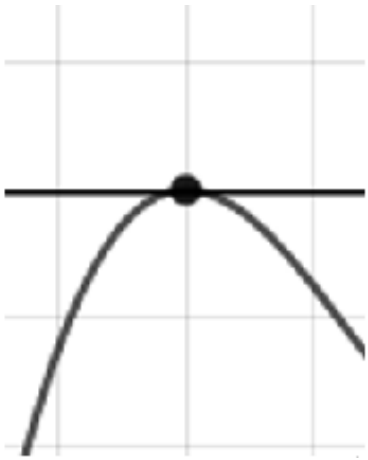
---

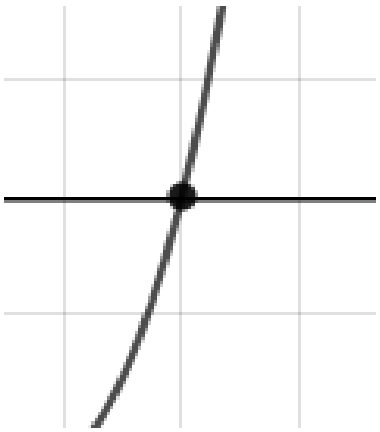
8. Describe the zero behavior of the zero $x=5$ of the polynomial below.

$$f(x) = -9(x-6)^{11}(x+6)^9(x-5)^7(x+5)^6$$

A. 

C. 

B. 

D. 

E. None of the above.

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9. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$\frac{5}{3}, 7, \text{ and } \frac{-7}{5}$$

A. $a \in [13, 24], b \in [143, 153], c \in [348, 358],$ and $d \in [239, 253]$

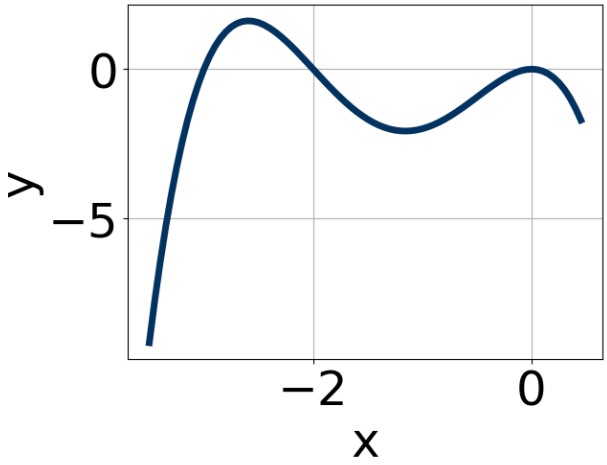
B. $a \in [13, 24], b \in [-110, -101], c \in [-10, -4],$ and $d \in [239, 253]$

C. $a \in [13, 24], b \in [-110, -101], c \in [-10, -4],$ and $d \in [-247, -238]$

D. $a \in [13, 24], b \in [106, 114], c \in [-10, -4],$ and $d \in [-247, -238]$

E. $a \in [13, 24], b \in [-60, -56], c \in [-287, -277],$ and $d \in [-247, -238]$

10. Which of the following equations *could* be of the graph presented below?



A. $9x^4(x+3)^7(x+2)^{11}$

B. $-20x^{10}(x+3)^{10}(x+2)^{11}$

C. $14x^4(x+3)^9(x+2)^8$

D. $-13x^9(x+3)^6(x+2)^9$

E. $-18x^6(x+3)^{11}(x+2)^9$